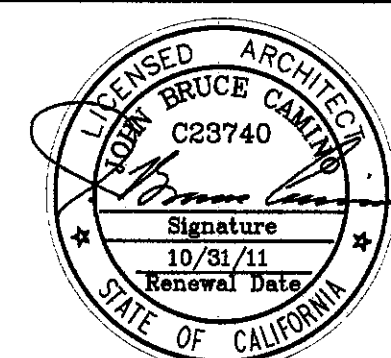
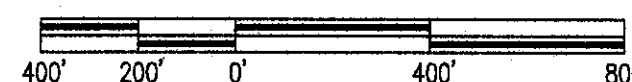


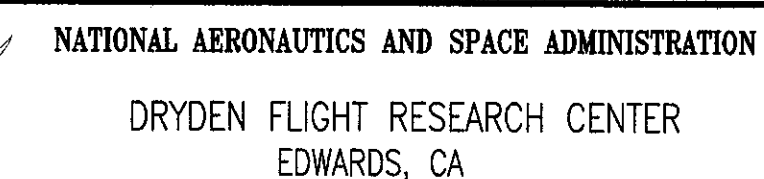
PROJECT TITLE:
REPAIR PRIMARY ELECTRICAL
DISTRIBUTION SYSTEM, PHASE VI
OPTION #2 – SUBSTATION 11 – 100%



SCALE: 1" = 400'



DEVELOPMENT ONE, INC.
1611 East Fourth Street, Suite 250
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J.Bruce Camino, Architect, AIA, NCARB
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[illegible]

	DRAWING TITLE
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TITLE AND INDEX SHEET

PROJECT TITLE

REPAIR PRIMARY ELECTRICAL
DISTRIBUTION SYSTEM, PHASE VI
OPTION #2 - SUBSTATION 11 - 100%

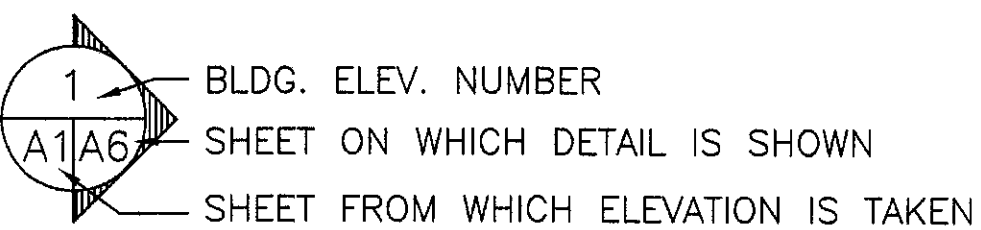
DRAWING INDEX	
SHEET	TITLE
T1	TITLE AND INDEX SHEET
T2	GENERAL NOTES
CIVIL	
C1	INDEX, LEGEND & ABBREVIATIONS
C2	CIVIL SITE PLAN
C3	DETAILS
C4	DETAILS
ELECTRICAL	
E1	ELECT. SYMBOLS, NOTES AND ABBREVIATIONS
E2	SINGLE LINE DIAGRAM
E3	UTILITY PLAN
E4	PARTIAL SITE PLAN DEMOLITION
E5	PARTIAL SITE PLAN REMODEL
E6	ELECTRICAL DETAILS
OPTION #2 SCOPE	
THIS PACKAGE IS BID OPTION #2 FOR PROJECT EDM-1698 - REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM PHASE VI AND IS INTENDED TO BE EXECUTED UNDER THE SAME SPECIFICATIONS, GENERAL CONDITIONS AND REQUIREMENTS OF THAT PROJECT AS REQUIRED BY THE NASA CONTRACTING OFFICER.	
SCOPE: REPLACE EXISTING ELECTRICAL EQUIPMENT, AND INSTALL NEW ELECTRICAL EQUIPMENT AT DFRC SUBSTATION #11. DEMOLISH EXISTING FENCE AND PARTIAL CONCRETE PAD. INSTALL NEW CONCRETE YARD, RAISED EQUIPMENT PAD AND FENCE WITH GATES.	
AERONAUTICS AND SPACE ADMINISTRATION DEN FLIGHT RESEARCH CENTER EDWARDS, CA	APPROVALS <small>Chief, Facilities Engineering & Asset Mgmt. Office</small> Project Manager Security Officer Principal Investigator SCSD Office Telecom DRAWING BY DATE STRID W.O.# TRADE SH No. PLOT SCALE CAD FILE NAME DATE PRINTED T1 EDM-1698
TITLE AND INDEX SHEET	DATE 6/23/10 6/23/10 6/23/10 6/23/10 6/21/10 6/21/10
PRIMARY ELECTRICAL TION SYSTEM, PHASE VI SUBSTATION 11 - 100%	SHEET No. 1 of 1

ABBREVIATIONS

ACT	ACOUSTIC TILE
ACP	ACCESS PANEL
ACT	ASBESTOS COMPOSITION TILE
AFF	ABOVE FINISH FLOOR
ALUM	ALUMINUM
BD	BOARD
BLDG	BUILDING
CPT	CARPET
CEM	CEMENT
CH	CEILING HEIGHT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CPOI	CONTRACTOR PROVIDED OWNER INSTALLED
CT	CERAMIC TILE
DWP	DRYWALL PAINTED
DR	DOOR
(E)	EXISTING
EM	ELASTOMERIC MEMBRANE
EN	ENAMEL
EWC	ELECTRIC WATER COOLER
EXIST	EXISTING
EC	EXPOSED CONSTRUCTION
ECP	EXPOSED CONSTRUCTION PAINTED
EXTR	EXTRUDED
EXT	EXTERIOR
FBI	FEDERAL BUREAU OF INVESTIGATION
FC	FINISH CEILING
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FIN	FINISH(ED)
FEC	FIRE EXTINGUISHER CABINET
FL	FLOOR
FW	FACE OF WALL
GALV	GALVANIZED
GL	GLASS
GWB	GYPSUM WALL BOARD
GYP	GYPSUM
HC	HOLLOW CORE
HDW	HARDWARE
HM	HOLLOW METAL
HR	HOUR
HT	HEIGHT
HWD	HARDWOOD
INS	INSULATION
INT	INTERIOR
LAM	LAMINATE
MFR	MANUFACTURER
MFT	MINERAL FISSURED TILE
MIN	MINIMUM
MWP	MEMBRANE WATERPROOFING
NAT	NATURAL
(N)	NEW
NIC	NOT IN CONTRACT
OH	OVERHANG
OPCI	OWNER PROVIDED, CONTRACTOR INSTALLED
OPOI	OWNER PROVIDED, OWNER INSTALLED
PERF	PERFORATED
PL	PLASTER
P-LAM	PLASTIC LAMINATE
PNL	PANEL
PT	PAINT
PTN	PARTITION
PWD	PLYWOOD
QT	QUARRY TILE
RB	RUBBER BASE
RE	REFER TO
REIN	REINFORCING
RM	ROOM
SC	SOLID CORE
SIM	SIMILAR
ST	STEEL
SS	STAINLESS STEEL
SSD	SEE STRUCTURAL DRAWINGS
STRUCT	STRUCTURAL
SUSP	SUSPENDED
TBD	TO BE DETERMINED
TEL	TELEPHONE
THLD	THRESHOLD
TOS	TOP OF SLAB
UBC	UNIFORM BUILDING CODE
UG	UNDERGROUND UTILITY
TYP	TYPICAL
UC	UNDER CUT
UON	UNLESS OTHERWISE NOTED
VCT	VINYL COMPOSITION TILE
VIF	VERIFY IN FIELD
VWC	VINYL WALL COVERING
VYN	VINYL
WCO	WALL CLEAN OUT
WD	WOOD
WP	WEATHER PROOF
WR	WATER RESISTANT
WWF	WOVEN WIRE FABRIC

SYMBOL LEGEND

EXTERIOR ELEVATION AND PHOTO REFERENCES



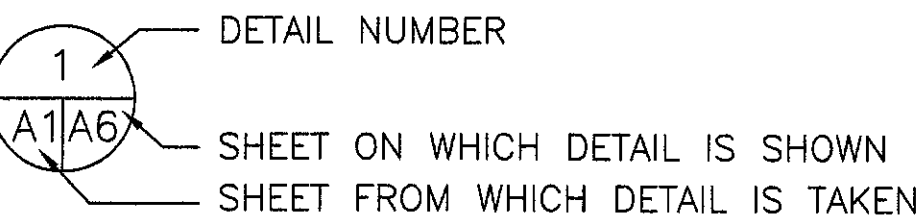
SYMBOL LEGEND



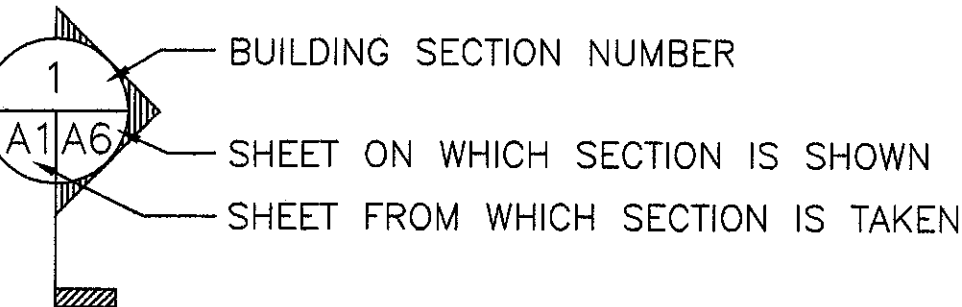
ROOM REFERENCE

ROOM—ROOM NAME
[101]—ROOM NUMBER

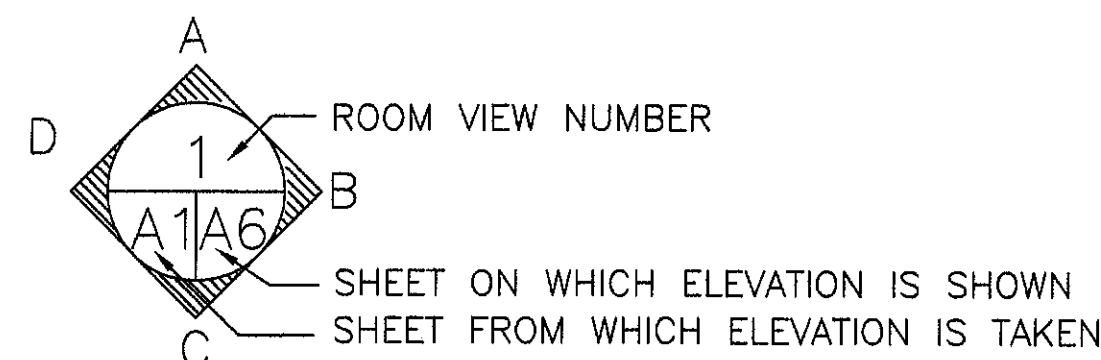
DETAIL REFERENCE



BUILDING SECTION



INTERIOR ELEVATION REFERENCE



GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES HAVING JURISDICTION.
2. INSTALL ALL MANUFACTURED ITEMS, MATERIALS AND EQUIPMENT IN STRICT ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
3. CONTRACTOR IS RESPONSIBLE FOR EXAMINING ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND CONFIRMING THAT WORK MAY BE CONSTRUCTED AS SHOWN BEFORE PROCEEDING WITH CONSTRUCTION. IF THERE ARE ANY QUESTIONS REGARDING THESE OR OTHER COORDINATION QUESTIONS, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE CONTRACTING OFFICER BEFORE PROCEEDING WITH WORK IN QUESTION.
4. ALL WORK NOTED "N.I.C." OR "NOT IN CONTRACT" IS TO BE ACCOMPLISHED BY A CONTRACTOR OTHER THAN THE GENERAL CONTRACTOR AND IS NOT TO BE PART OF THE CONSTRUCTION AGREEMENT. THE GENERAL CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS AS REQUIRED.
5. "TYPICAL" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS THE SAME OR REPRESENTATIVE OF ALL SIMILAR CONDITIONS THROUGHOUT, UNLESS OTHERWISE NOTED.

GENERAL NOTES (CONT.)

6. CONTRACTOR IS TO ERECT AND MAINTAIN TEMPORARY BRACING, BARRICADES, SIGNS, AND OTHER MEASURES AS NECESSARY TO PROTECT THE PUBLIC, WORKERS, OTHER PERSONS, AND ADJOINING PROPERTY FROM DAMAGE FROM DEMOLITION WORK, ALL IN ACCORDANCE WITH THE APPLICABLE CODES AND REGULATIONS. CONTRACTOR IS TO PROVIDE NOISE AND DUST ABATEMENT AS REQUIRED TO PREVENT DISTURBANCE AND NUISANCE TO ADJACENT PREMISES AND SURROUNDING AREAS. OPERATIONAL PROCEDURES SHALL BE OPTIONAL WITH THE CONTRACTOR. DEMOLITION AND REMOVAL WORK SHALL BE DONE IN A MANNER WHICH WILL MINIMIZE THE SPREAD OF DUST AND FLYING PARTICLES. REMOVED MATERIALS AND DEBRIS SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF OFF BASE IN A LEGAL MANNER.
7. CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AT THE JOB SITE PRIOR TO BIDDING AND START OF CONSTRUCTION. IF ANY DISCREPANCIES ARE FOUND, CONTRACTING OFFICER SHALL BE NOTIFIED FOR CLARIFICATION.
8. THE CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS SHOWN ON THE CONSTRUCTION DOCUMENTS BEFORE MANUFACTURING AND/OR FABRICATION OF ALL WORK. ANY WORK PROVIDED AND INSTALLED IN CONFLICT WITH THE CONSTRUCTION DOCUMENTS SHALL BE CORRECTED BY EACH CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACTING AGENCY.
9. ALL SYMBOLS AND ABBREVIATIONS ARE CONSIDERED TO BE CONSTRUCTION STANDARDS. IF ANY CONTRACTOR HAS A QUESTION OR NEEDS CLARIFICATION, CONTRACTING AGENCY IS TO BE CONTACTED BEFORE WORK, MANUFACTURING AND/OR FABRICATION COMMENCES.
10. DO NOT SCALE DRAWINGS; WRITTEN DIMENSIONS TAKE PRECEDENCE. LARGE SCALE DETAILS GOVERN OVER SMALL SCALE DETAILS.
11. CONTRACTOR IS REQUIRED TO GET PERMITS FROM NASA SAFETY OFFICE AND PROVIDE CURRENT TRAINING CERTIFICATIONS PRIOR TO ENTERING ANY CONFINED SPACE, OR PERFORMING HOT WORK (WELDING, BRAZING, CUTTING, GRINDING) OR WORK WITH ANY HAZARDOUS MATERIALS.
12. WHEN NOTED "APPROVED EQUAL" IT SHALL BE UNDERSTOOD THAT A PROPRIETARY PRODUCT MAY BE SUBSTITUTED BY THE CONTRACTOR WITH AN EQUIVALENT PRODUCT ONLY AS APPROVED BY THE CONTRACTING OFFICER.
13. WHEN A PROPRIETARY PRODUCT IS NOTED, CONTRACTOR MAY SUBSTITUTE AN EQUIVALENT PRODUCT ONLY AS APPROVED BY THE CONTRACTING OFFICER.
14. THIS CONSTRUCTION OPTION PACKAGE IS A SUBPART OF THE NASA DFRC PROJECT "REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM, PHASE VI" AND IS SUBJECT TO THE SPECIFICATIONS MANUAL ISSUED FOR THAT PROJECT.

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CONSTRUCTION OPTIONS

THE CONTRACTOR SHALL ISSUE A COMPLETE BID FOR THE ENTIRE PROJECT WITH THE FOLLOWING ITEMS IDENTIFIED WITH AS CONSTRUCTION BID OPTIONS:

- 1 BID OPTION #1: PARKING LOT LIGHTING. (UNDER SEPARATE COVER)
- 2 BID OPTION #2: SUBSTATION 11 (THIS PACKAGE)
- 3 BID OPTION #3: CABLE TESTING (UNDER SEPARATE COVER)

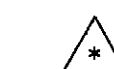
LEGEND



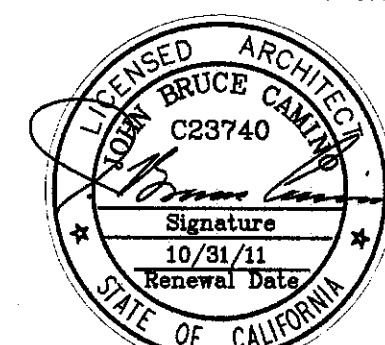
INDICATES BID OPTION ITEM OR
DRAWING REVISION ITEM



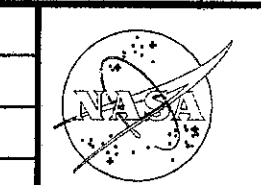
INDICATES OPTION NUMBER



INDICATES REVISION NUMBER



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[illegible]

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 DRYDEN FLIGHT RESEARCH CENTER
 EDWARDS, CA

DRAWING TITLE

GENERAL NOTES

PROJECT TITLE

REPAIR PRIMARY ELECTRICAL
DISTRIBUTION SYSTEM, PHASE VI
OPTION #2 - SUBSTATION 11 - 100%

APPROVALS		DATE
Chief Facilities Engineering & Asset Mgmt. Office	<i>[Signature]</i>	6/23/10
Project Manager	<i>[Signature]</i>	6/23/10
Security Manager	<i>[Signature]</i>	6/23/10
Project Requester	<i>[Signature]</i>	6/23/10
Safety Office	<i>[Signature]</i>	6/23/10
Team Lead	<i>[Signature]</i>	6/21/10
DRWN BY	<i>[Signature]</i>	DATE STRTD 7-12-08
W.O. #		DATE PRNTD 6-14-10
PILOT SCALE	TRADE ST	EDM-1698
CAD FILE NAME	T2	SHEET No 2 of 12


GENERAL NOTES

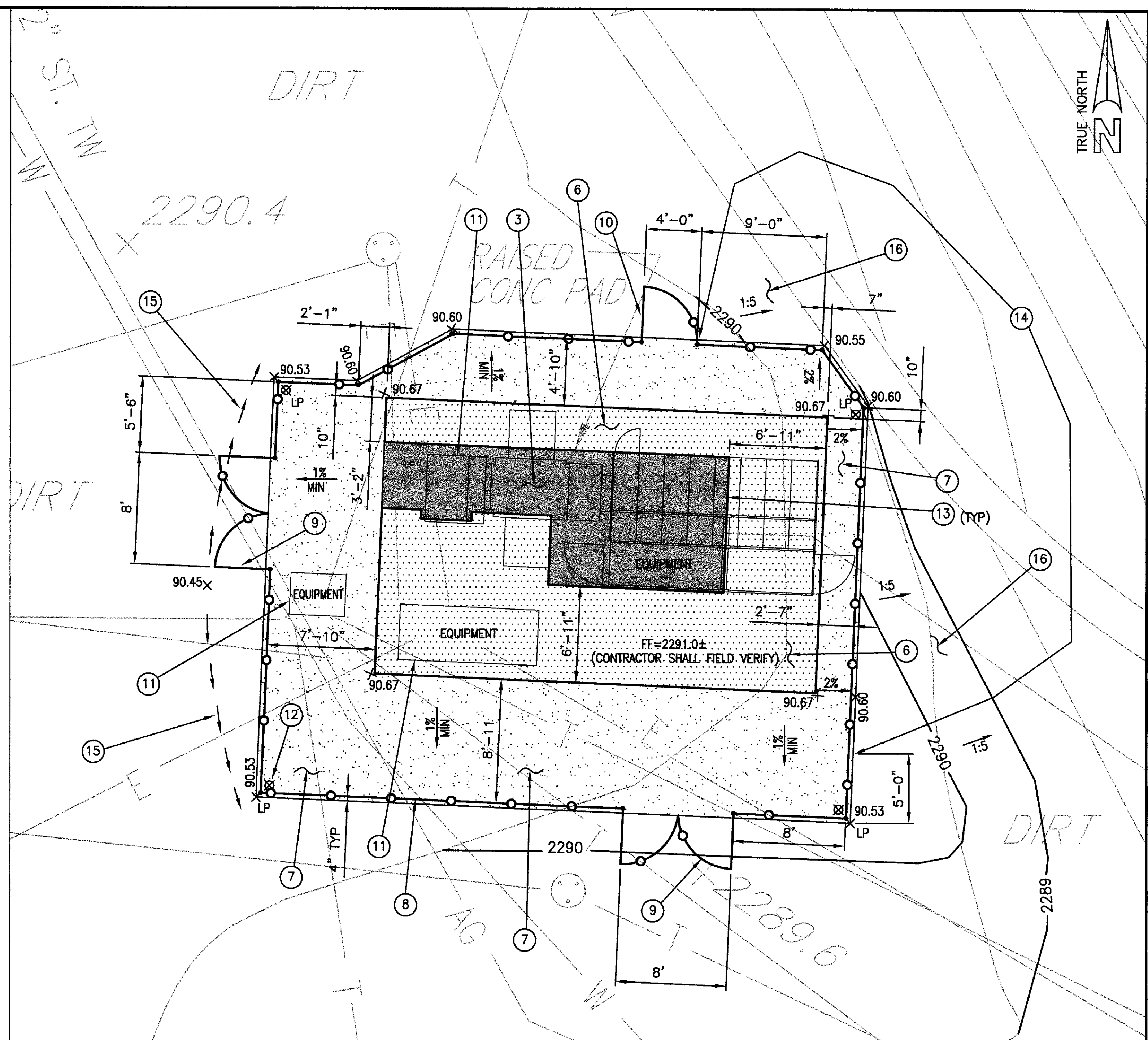
AA	ANGLE	N	NORTH, NORTHINGS
AB	ABANDONED COMP AIR	NAD	NORTH AMERICAN DATUM
AC	ABANDONED	NAVD	NORTH AMERICAN VERTICAL DATUM
ACP	ASBESTOS CEMENT PIPE	NAVFAC	NAVAL FACILITIES
AC	ASPHALTIC CONCRETE	N.I.C.	NOT IN CONTRACT
AG	ABANDONED GAS	NPW	NON-POTABLE WATER
ARV	AIR RELEASE VACUUM ASSY	NF	NOT FOUND
AS	ABANDONED SEWER	NS	NEAR SIDE
ASPH	ASPHALT	NO.#	NUMBER
ASSY	ASSEMBLY	O/C	ON CENTER
AVE.	AVENUE	OD	OUTSIDE DIAMETER
AW	ABANDONED WATER	OH, O/H	OVER HEAD
A/G	ABOVE GROUND	OPNG	OPENING
B	BELL	OS&Y, OSY	OUTSIDE STEM & YOKE
BC	BEGIN CURVE	P	POLE
BFP	BACKFLOW PREVENTER	PCC	PORTLAND CEMENT CONCRETE
BLDG	BUILDING	PE	PLAIN END
B/G	BELOW GROUND	PE	POLYETHYLENE
BOT	BOTTOM	PIV	POST INDICATOR VALVE
BOV	BLOW-OFF VALVE ASSY	PL	PLATE
CB	CATCH BASIN	POC	POINT OF CONNECTION
CICB	CURB INLET CATCH BASIN	PNL	PANEL
CI	CAST IRON	PRV	PRESSURE REDUCING VALVE
CL	CLASS, CENTER LINE	PSF	POUNDS PER SQUARE FOOT
CLR	CLEAR	PSI	POUNDS PER SQUARE INCH
CMU	CONCRETE MASONRY UNIT	PT	POST
CO	CLEANOUT	PWO	PUBLIC WORKS OFFICE
COM	COMMUNICATIONS	PP	POWER POLE
COMP	COMPRESSED	PVC	POLYVINYL CHLORIDE
COND	CONDUIT	PVMT	PAVEMENT
CONT	CONTINUOUS	R	RADIUS
CONC	CONCRETE	RD.	ROAD
CONN	CONNECT, CONNECTION	RED.	REDUCER
CPLG	COUPLING	REF	REFERENCE
C&G	CURB/GUTTER	REINF	REINFORCED
C	CENTER LINE	REQD	REQUIRED
DET	DETAIL	RJ	RESTRAINED JOINT
DBL	DOUBLE	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
DIA, Ø	DIAMETER	S/C	CONC. LINED/COATED STEEL PIPE
DI	DUCTILE IRON	SS	SANITARY SEWER
D.I.P.,DIP	DUCTILE IRON PIPE	SCH	SCHEDULE
DWG.	DRAWING	S	SIGN, SLOPE
E	EAST, EASTINGS, ELECTRIC	SFM	SEWER FORCE MAIN
EQ	EQUAL	SIM	SIMILAR
EA	EACH	SMH	SEWER MANHOLE
EC	END CURVE	SQ	SQUARE
EIC	ENGINEER IN CHARGE	SST	STAINLESS STEEL
EL	ELEVATION	ST.	STREET
ELEC	ELECTRICAL	STA	STATION
EMH	ELECTRICAL MANHOLE	STL	STEEL
ETC	ETCETERA	SP	STANDPIPE
EW	EACH WAY	TAP.	TAPPING
EXP	EXPANSION	TB	TOP OF BERM
EXST	EXISTING	TD	TRENCH DRAIN
FH	FIRE HYDRANT	TEL	TELEPHONE
FLG	FLANGE	TG	TOP OF GRATE
FIN.	FINISH	TMH	TELEPHONE MANHOLE
FL	FLOOR	TP	TOP OF PAVEMENT
FF	FINISHED FLOOR	TYP	TYPICAL
FO	FIBER OPTIC	T&B	TOP AND BOTTOM
FS	FAR SIDE	U/G	UNDERGROUND
FT	FEET	UL	UNDERWRITERS LABORATORIES
FW	FIRE WATER	UNK	UNKNOWN
GAL	GALLON	U.O.N.	UNLESS OTHERWISE NOTED
GALV	GALVANIZED	UTIL	UTILITY
GB	GRADE BREAK	V	VALVE
GP	GUARD POST	VCP, V.C.P.	VITRIFIED CLAY PIPE
GR	GUARD RAIL	VERT	VERTICAL
GIS	GEOGRAPHICAL INFORMATION SYSTEM	VLT	VAULT
GPM	GALLONS PER MINUTE	W	WATER, WIDE, WIDTH
GPS	GEOGRAPHICAL POSITIONING SYSTEM	WH	WATER HANDHOLE
GR	GRADE	WLS	WELDED STEEL
GUT.	GUTTER	W/	WITH
GV	GATE VALVE	±	PLUS OR MINUS
H	HIGH, HEIGHT	Δ	DELTA
HH	HANDHOLE		
HDPE	HIGH DENSITY POLYETHYLENE		
HDWL	HEADWALL		
HORIZ	HORIZONTAL		
HTHW	HIGH TEMPERATURE HOT WATER		
HWY	HIGHWAY		
I.D.	INTERIOR DIMENSION		
IE	INVERT ELEVATION		
INV	INVERT		
IRR	IRRIGATION		
L	ARC LENGTH, LENGTH		
LA	LANDSCAPED AREA		
MAX	MAXIMUM		
MIN	MINIMUM		
MH	MANHOLE		
MFR	MANUFACTURER		

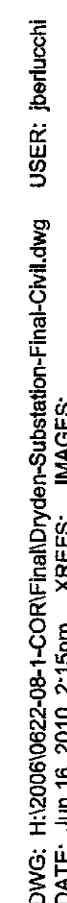
CONCRETE MONUMENT AT CORNER OF WALKER AVE AND LILLY AVE
NORTHERN 528,717.766'
EASTERN 2,033,320.393'
ELEVATION 2,305.56'

1) CONTRACTOR SHALL POTHOLE ALL EXISTING UTILITY PIPES THAT CROSS NEW CONC EQUIPMENT PAD BEFORE ORDERING ANY CIVIL SITE MATERIALS. CONTRACTOR SHALL RECORD TOP AND BOTTOM OF PIPE / DUCT BANK ELEVATIONS AT EACH PIPE CROSSING. CONTRACTOR SHALL NOTIFY CONTRACTING OFFICER OF ANY POSSIBLE CONFLICTS. ALL POTENTIAL CONFLICTS SHALL BE RESOLVED BEFORE THE CONTRACTOR IS ALLOW TO ORDER ANY CIVIL UTILITY MATERIALS.

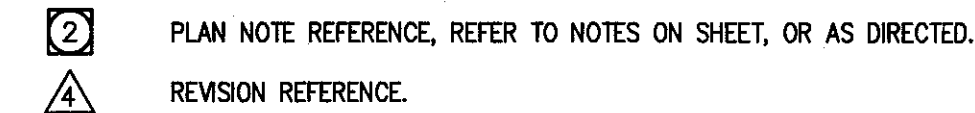
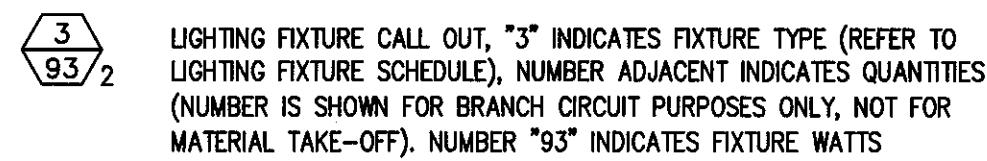
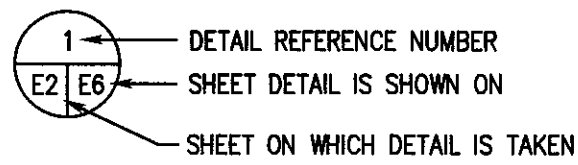
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 <p>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</p> <p>HUGH L. DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA</p>	DRAWING TITLE		APPROVALS		DATE
	INDEX, LEGEND, & ABBREVIATIONS		Chief, Facilities Engineering & Flight Wgnt. Office		6/23/10
			Project Manager		6/23/10
			Security Officer		6/23/10
			Inspector		6/23/10
			Safety Officer		6/23/10
Telecom.		6/21/10			
PROJECT TITLE		DRAWN BY	JFB	DATE STRTD	7-12-08
REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM, PHASE VI ② OPTION #2 - SUBSTATION 11 - 100%		PLOT SCALE		DATE PRNTD	6-14-10
		CAD FILE NAME		TRADE SH. NO.	EDM-1698
		SHEET No.		3 of 12	





ANNOTATIONS



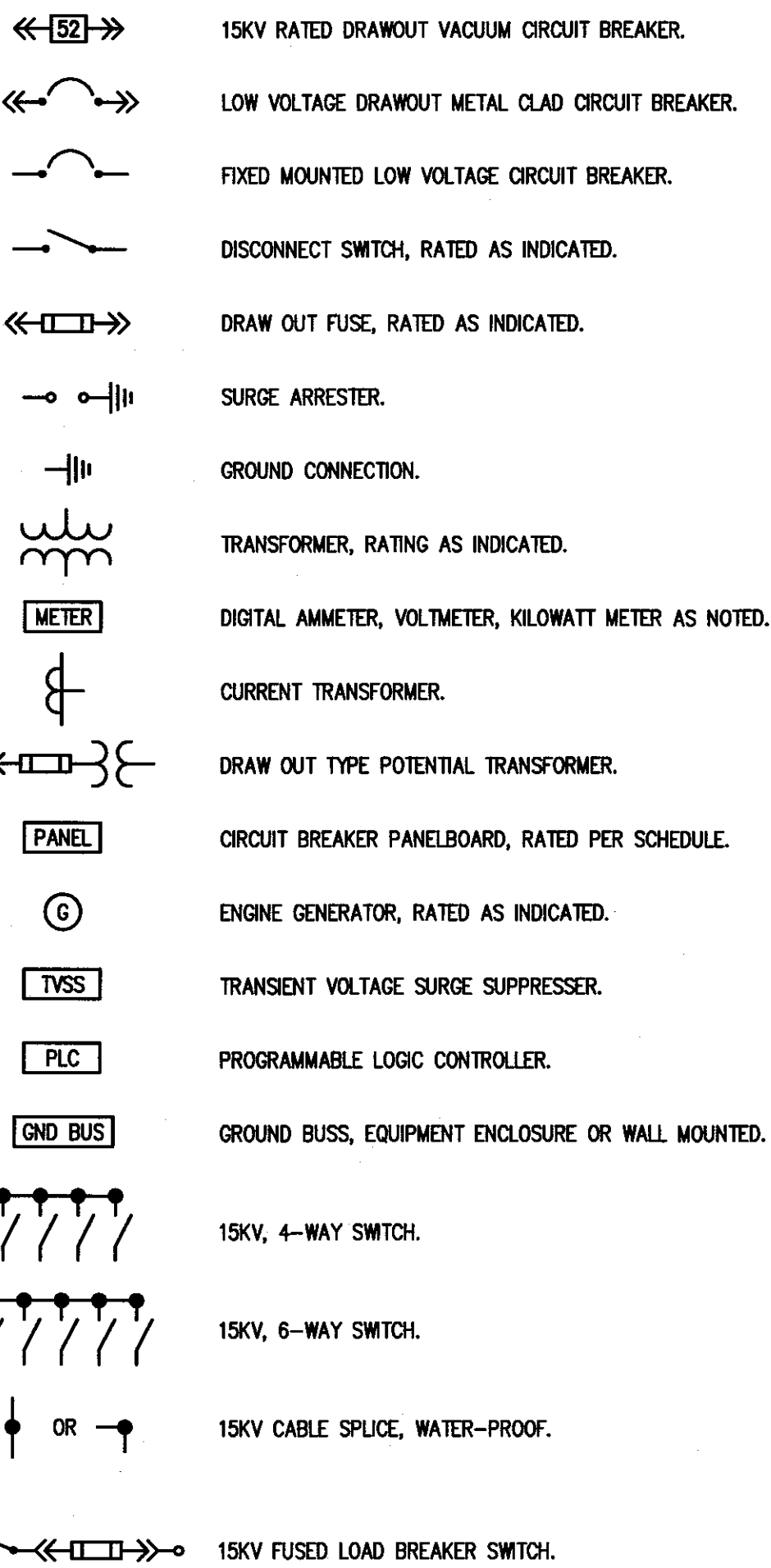
ABBREVIATIONS

A/C	ASPHALT CONCRETE
ADA	AMERICAN WITH DISABILITIES ACT
A.F.F.	ABOVE FINISH FLOOR
A.F.G.	ABOVE FINISH GRADE
AWG	AMERICAN WIRE GAUGE
AMP, A	AMPERE
A.I.C.	AMPERES INTERRUPTING CAPACITY (SYMMETRICAL)
AF/AT	AMP FRAME, AMP TRIP
AS/AF	AMP SWITCH, AMP FUSE
CIRC., CKT.	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CM	CENTIMETER
C.O.	CONDUIT ONLY, COMPLETE WITH PULLSTRING
CONN	CONNECTED
CPT	CONTROL POWER TRANSFORMER
CLCB	CURRENT LIMITING CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
CT	CURRENT TRANSFORMER
DIA	DIAMETER
E.C.	ELECTRICAL CONTRACTOR
EMS	ENERGY MANAGEMENT CONTROL SYSTEM
EMT	ELECTRICAL METALLIC TUBING
ENT	ELECTRICAL NON-METALLIC TUBING
EWC	ELECTRIC WATER COOLER
E-O-L	END-OF-LINE CIRCUIT TERMINATOR
EF	EXHAUST FAN
E/G	EQUIPMENT GROUND (GREEN)
E	EXISTING EQUIPMENT
EP	EXPLOSION PROOF
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FACT	FIRE ALARM TERMINAL CABINET
FLA	FULL LOAD AMPS
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GRD	GROUND
HOA	HAND-OFF-AUTO
HVAC	HEATING, VENTILATING AND AIR CONDITIONING
H, W, D, L	HEIGHT, WIDTH, DEPTH, LENGTH
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
I/G	ISOLATED GROUND
JBOX	JUNCTION BOX
K	DEGREE KELVIN
KVA	KILOVOLT AMPERES
KW	KILOWATT
LCL	LONG CONTINUOUS LOAD
L.F.	LINEAR FEET
LTG, LTS	LIGHTING
LPS	LOW PRESSURE SODIUM
MAX.	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MIN.	MINIMUM
MLO	MAIN LUGS ONLY
MM	MILLIMETER
MV	MERCURY VAPOR
MH	METAL HALIDE
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILS
MCP	MOTOR CIRCUIT PROTECTOR
MFR.	MANUFACTURER
MTD	MOUNTED
MW	MICROWAVE
NEC	NATIONAL ELECTRICAL CODE
NC	NORMALLY CLOSED
NO	NORMALLY OPENED
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO. or #	NUMBER
OFOI	OWNER FURNISHED, CONTRACTOR INSTALLED.
P	POLE
PC	PHOTOCELL
PEDC	PRIMARY ELECTRICAL DISTRIBUTION CENTER
PRIMARY	OVER 600 VOLTS
PH, or Ⓟ	PHASE
PROVIDE	FURNISH, INSTALL AND CONNECT.
PT	POTENTIAL TRANSFORMER
PA	PUBLIC ADDRESS
REC, RECEPT	RECEPTACLE
REF	REFRIGERATOR
RGS	RIGID GALVANIZED STEEL
SECONDARY	600 VOLTS AND LESS
SQ.	SQUARE
TC	TIMELOCK
TEL/DATA	TELEPHONE AND DATA
TV	TELEVISION
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
V	VOLTS
VA	VOLT AMPERES
WP	WEATHERPROOF
W	WIRE

GENERAL NOTES:

- CONDUIT SIZES CALLED OUT ON DRAWINGS ARE NOT NECESSARILY BASED ON THE MINIMUM SIZE ALLOWED BY THE NATIONAL ELECTRICAL CODE AND MAY BE PURPOSELY OVERSIZED FOR EASE OF CONDUCTOR PULLING OR TO AVOID EXCESS CONDUIT HEATING. IN NO CASE SHALL CONDUIT SIZE BE SMALLER THAN IS REQUIRED BY THE NATIONAL ELECTRICAL CODE.
- THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL JUNCTION AND PULL BOXES REQUIRED FOR THE INSTALLATION OF ELECTRICAL DEVICES AND EQUIPMENT, WHETHER OR NOT SPECIFICALLY INDICATED ON THE PLANS. SIZE OF THESE BOXES SHALL BE PER THE NATIONAL ELECTRICAL CODE.
- THE CONTRACTOR SHALL FURNISH ALL EQUIPMENT FOR TEMPORARY CONSTRUCTION POWER AS REQUIRED.
- ALL PENETRATIONS THROUGH FIRE BARRIERS SHALL BE FIRE STOPPED TO MAINTAIN THE INTEGRITY OF THE FIRE BARRIER. FIRE STOPPING MATERIAL SHALL BE U.L. LISTED.
- THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE CONTRACTING OFFICER BEFORE DRILLING ANY PENETRATION THROUGH STRUCTURAL MEMBERS OR FIRE RATED WALLS AND SLABS.
- SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF WORK, THE CONTRACTOR SHALL MARK SUCH CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE ALTERNATE METHODS TO THOSE SPECIFIED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE PROPOSED ALTERNATE METHODS TO THE CONTRACTING OFFICER. THE CONTRACTOR SHALL NOT PROCEED UNTIL APPROVAL IS OBTAINED. REARRANGEMENT OF WORK FOR THE PURPOSE OF COORDINATION SHALL NOT BE CONSIDERED AN ITEM FOR EXTRA COST.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. TESTING SHALL BE DONE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT A COPY OF SHOP DRAWINGS TO THE CONTRACTING OFFICER FOR INFORMATION.
- PROVIDE ELECTRICAL SYSTEM EQUIPMENT TESTS AND RUNNING TESTS TO DEMONSTRATE ITS OPERATIONS AND COMPLIANCE WITH THE EQUIPMENT SPECIFICATIONS. TEST ALL WIRING AND EQUIPMENT TO INSURE PROPER OPERATION ACCORDING TO FUNCTIONS SPECIFIED HEREIN AND ON THE DRAWINGS. THE CONTRACTOR WILL SUBMIT DETAILED TESTING PLANS TO THE GOVERNMENT FOR REVIEW AND APPROVAL BEFORE TESTING CAN BEGIN. A PRETEST WILL BE PERFORMED BY THE CONTRACTOR AND ALL DISCREPANCIES NOTICED BEFORE THE GOVERNMENT ACCEPTANCE TESTING WILL BEGIN. THE PRETEST WILL BE WITNESSED BY A GOVERNMENT REPRESENTATIVE. VERY LOW FREQUENCY TESTING, PER SECTION 337102, SHALL ONLY BE PERFORMED ON NEW MEDIUM VOLTAGE CABLES.
- WARRANTY: ALL WORK IN THIS SECTION SHALL BE UNDER WARRANTY FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE OF THE WORK AS A WHOLE BY THE CONTRACTING OFFICER. SHOULD ANY EQUIPMENT OR MATERIAL FAIL WITHIN THIS PERIOD, THE CONTRACTOR SHALL REPLACE OR REPAIR THAT ITEM AT NO COST FOR MATERIAL AND/OR SERVICES IF SUCH IS DUE TO FAULTY WORKMANSHIP OR QUALITY OF MATERIAL FURNISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGE TO ANY PART OF THE PREMISES CAUSED BY FAILURE IN THE EQUIPMENT FURNISHED AS PART OF THE CONTRACT DRAWINGS FOR A PERIOD OF ONE YEAR AFTER THE FINAL ACCEPTANCE OF THE WORK AS A WHOLE.
- ALL MECHANICAL CONTROL SYSTEMS EQUIPMENT SHALL BE PROVIDED, INSTALLED AND WIRED BY THE MECHANICAL CONTRACTOR PER THE CONTRACT DOCUMENTS. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUITS ONLY FOR CONTROL WIRING. ELECTRICAL POWER FOR THE MECHANICAL CONTROL SYSTEM EQUIPMENT SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. THIS INCLUDES THE POWER WIRING, AND CONNECTION TO THE MECHANICAL CONTROL SYSTEMS EQUIPMENT.
- ALL EQUIPMENT SHALL BE DESIGNED AND INSTALLED FOR USE IN A SEISMIC ZONE 4 AREA. ALL SEISMIC DESIGN SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF CALIFORNIA.
- POTHOLE AND LOCATE ALL UTILITY LINES WITHIN THE PROJECT AREA PRIOR TO START OF EXCAVATION IN ORDER TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITIES. REPAIR ALL DAMAGES TO EXISTING UTILITIES AT NO COST TO OWNER.
- PATCH AND PAINT ALL EXPOSED ELECTRICAL MATERIAL, INCLUDING CONDUIT, SURFACE METAL RACEWAYS, JUNCTION BOXES, PANELS, AND DEVICES TO MATCH THE ADJACENT SURFACES IN TEXTURE AND COLOR.
- REPAIR ANY DAMAGE TO EXISTING CONSTRUCTION RESULTING FROM THE INSTALLATION OF ELECTRICAL ITEMS. THE AREAS REPAIRED SHALL MATCH THE ADJACENT SURFACES IN TEXTURE AND COLOR.
- PROVIDE DEWATERING EFFORT FOR NEW BELOW GRADE EXCAVATION/TRENCHING IF GROUND WATER IS ENCOUNTERED. THE CONTRACTOR SHALL OBTAIN A DIGGING PERMIT BEFORE ANY EXCAVATION OR TRENCHING.
- ALL ELECTRICAL SPLICES SHALL BE WATERPROOF. CONTRACTOR SHALL SUBMIT AN AHA ON HOW SPLICING IS TO BE PERFORMED TO MITIGATE THE RISK OF ACCIDENTAL EXPOSURE TO HIGH VOLTAGE.
- ALL MOUNTING HARDWARE, CHANNELS AND FASTENING DEVICES IN EXTERIOR LOCATIONS SHALL BE 316 STAINLESS STEEL UNLESS NOTED.
- PROVIDE A COMPLETE AND OPERATING ELECTRICAL SYSTEM. PROVIDE SHALL MEAN "FURNISH AND INSTALL". WORK INCLUDES INSTALLATION OF ALL ELECTRICAL EQUIPMENT AND SYSTEMS, INCLUDING ANY FURNISHED BY OWNER OR OTHER TRADES, COMPLETE AND OPERATIONAL TO THE SATISFACTION OF THE CONTRACTING OFFICER, AS LIMITED BY THE INTENT OF THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION PRACTICES AND REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NFPA 70), NATIONAL ELECTRICAL SAFETY CODE, AMERICAN WITH DISABILITIES ACT, APPLICABLE INSTRUCTIONS OF MANUFACTURERS OF EQUIPMENT AND MATERIALS SUPPLIED FOR THE PROJECT, AND ALL ORDINANCES, RULES AND POLICIES OF THE STATE AND COUNTY IN WHICH THE WORK IS TO BE PERFORMED.
- THE CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS AND THE EXTENT OF REMOVAL, RELOCATION, RECONNECTION AND/OR NEW WORK PRIOR TO BIDDING. BID SUBMISSION SHALL BE REVOLVED ALL DISCREPANCIES AND QUESTIONS AND NO EXTRA PAYMENT WILL BE AUTHORIZED FOR WORK MADE NECESSARY BY THE CONTRACTOR'S FAILURE TO DO SO.
- ALL CIRCUITS SHALL INCLUDE AN INSULATED GREEN GROUNDING CONDUCTOR, SIZED PER THE NATIONAL ELECTRICAL CODE. THIS CONDUCTOR SHALL BE CARRIED IN ALL RACEWAYS INCLUDING THOSE INSTALLED FOR SWITCH LEGS AND SHALL BE ATTACHED TO THE DEVICE OR EQUIPMENT HOUSING USING A SUITABLE GROUNDING LUG.
- AT COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL PROVIDE A COPY OF AS-BUILT DRAWINGS IN CD-ROM TO THE CONTRACTING OFFICER.
- SAWCUT EXISTING AC PAVEMENT/SIDEWALK FOR NEW UNDERGROUND DUCTLINE INSTALLATIONS. PATCH AND REPAIR AC PAVEMENT/SIDEWALK TO MATCH EXISTING ADJACENT SURFACES. AT NON-PAVED AREAS, RESTORE SURFACES TO MATCH EXISTING ADJACENT SURFACES.
- ALL OUTAGES SHALL BE COORDINATED AND SCHEDULED WITH THE CONTRACTOR OFFICE AT LEAST (3) WEEKS IN ADVANCE OF REQUESTED OUTAGE IN WRITING. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING GENERATOR SUPPORT FOR SCHEDULED ELECTRICAL OUTAGE DUE TO CONSTRUCTION CONTRACT WORK.
- ALL NEW PRIMARY ELECTRICAL DUCTS SHALL BE ENCASED WITH "RED" COLORED CONCRETE.
- ALL SITE 15KV DISTRIBUTION CONDUITS SHALL INCLUDE #4/0 AWG BARE COPPER GROUND CONDUCTOR.
- PROVIDE GROUND BOND OF SWITCHGEAR SECTIONS TO SUBSTATION GRID USING #4/0 AWG BARE COPPER WIRE AND BOLTED CONNECTIONS.
- ALL ELECTRICAL CONDUCTORS FOR DISTRIBUTION AT 480 VOLTS AND BELOW SHALL BE THIN, 90°C INSULATION EXCEPT WHERE SPECIFIED ON SINGLE LINE DIAGRAM TO INSTALL DOL TYPE RHH/RHW-2 90°C CONDUCTORS.
- MINIMUM CONDUCTOR SIZE SHALL BE #12 AWG FOR BOTH POWER AND CONTROL CIRCUITS.
- OBTAIN CONFINED SPACE PERMIT FROM NASA PRIOR TO ENTRY OF UNDER GROUND MANHOLES AND VAULTS. SUBMIT A WRITTEN CONFINED SPACE SAFETY PLAN FOR REVIEW. PROVIDE PERSONNEL TRAINING CERTIFICATIONS AND MONITORING EQUIPMENT CALIBRATION TEST CERTIFICATION.
- GOVERNMENT RESERVES THE RIGHT TO WITNESS FACTORY TESTING. NOTIFY GOVERNMENT 30 CALENDAR DAYS PRIOR TO EQUIPMENT FACTORY TESTS FOR GOVERNMENT REPRESENTATIVE ATTENDANCE.

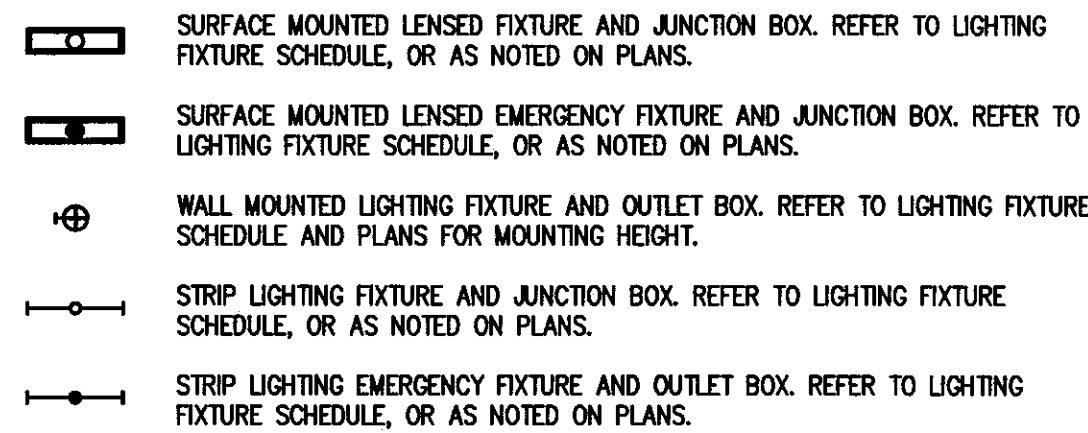
SINGLE LINE DIAGRAM SYMBOLS



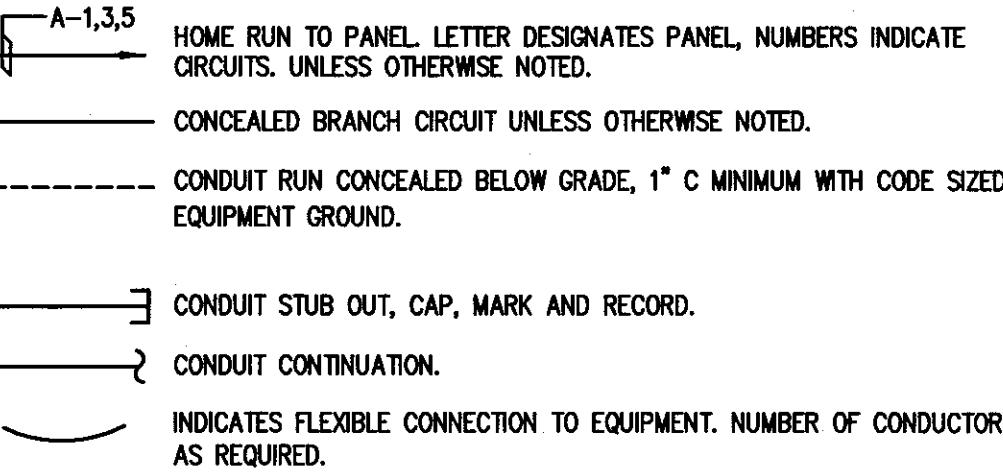
TELEPHONE/DATA SYMBOLS



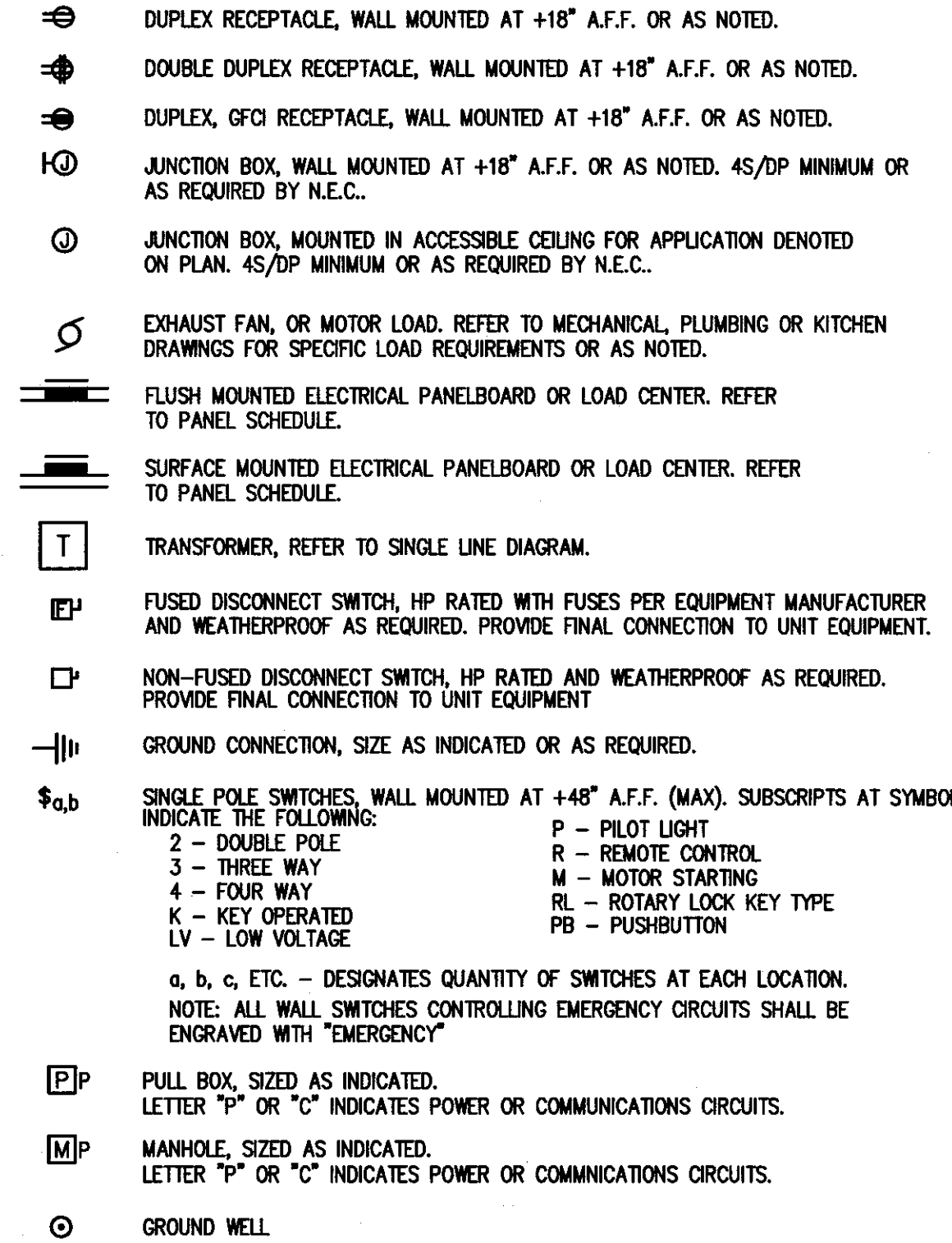
LIGHTING SYMBOLS



BRANCH CIRCUIT SYMBOLS



POWER SYMBOLS



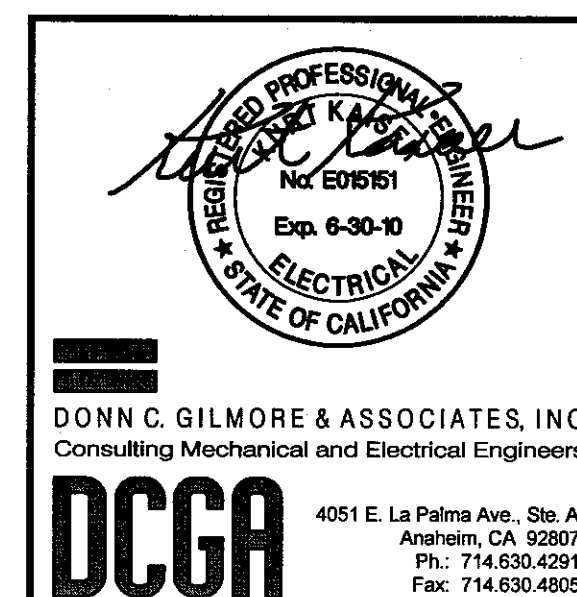
	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION		APPROVALS		DATE
	DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA		Project Engineer: <i>Don C. Gilmore</i> 6/23/10 Safety Officer: <i>Don Hach</i> 6/23/10 Project Inspector: <i>Don C. Gilmore</i> 6/23/10 <i>Don C. Gilmore</i> 6/23/10 <i>Don C. Gilmore</i> 6/23/10		
	DRAWING TITLE		ELECTRICAL SYMBOLS, NOTES & ABBREVIATIONS		
	PROJECT TITLE		REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM, PHASE VI		
DATE		SYM	REVISION	BY	A'PD
2		OPTION #2 - SUBSTATION 11 - 100%			


DRAWN BY	DRM	DATE STD'D	7-12-08
NO. #		DATE PRD'D	6-14-10
PLOT SCALE	NONE	TRADE SH. No.	EDM-1698
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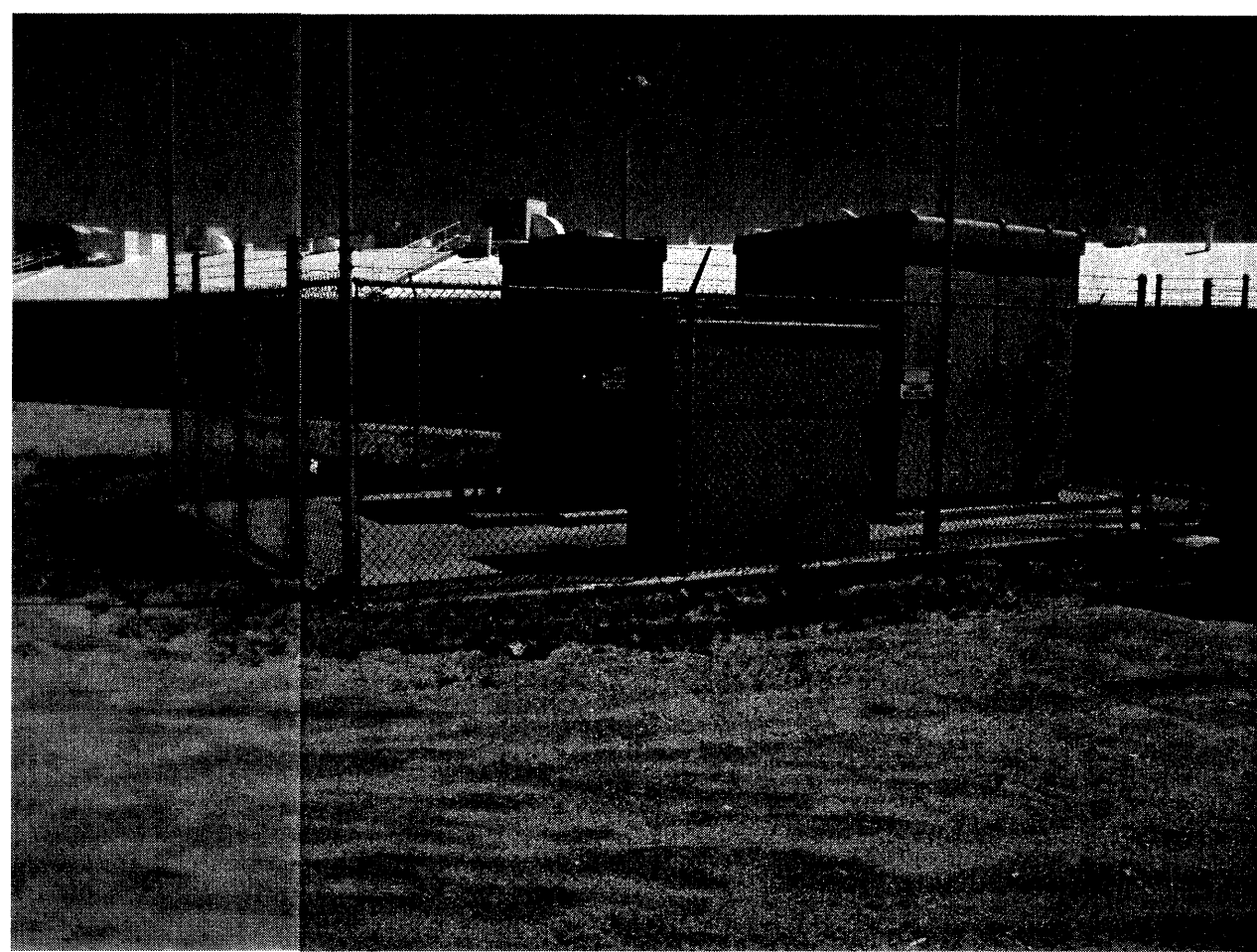
- 1 PROVIDE SQUARE D POWER LOGIC SERIES 4000 CIRCUIT MONITOR MODEL CM4250, WITH MODEL CMDFV VACUUM FLUORESCENT DISPLAY AND MODEL E202 ETHERNET COMMUNICATIONS CARD. PROVIDE MONITOR FOR ALL FEEDER CIRCUIT BREAKERS AND MAIN BREAKER.
- 2 PROVIDE 3 #50KCMIL, 15KV, 1333K INSULATION & 1 #4/0 BARE COPPER GROUND WIRE.
- 3 PROVIDE 15KVA, 480V-120/208V, 3-PHASE, 4-WIRE TRANSFORMER AND 100A, 120/208V, 3-PHASE, 4-WIRE LOAD CENTER INTEGRATED IN SWITCHGEAR ENCLOSURE. SEE LOAD CENTER "LC" SCHEDULE, THIS SHEET.
- 4 PROVIDE FAULT CURRENT ANALYSIS, COORDINATION STUDY, AND ARC FLASH HAZARD ANALYSIS. PROVIDE ARC FLASH LABELS ON 15KV INTERRUPTER SWITCH ENCLOSURE AND EACH 480V CIRCUIT BREAKER CUBICLE FRONT PANEL, PER NEMA GUIDELINES. INSTALL 480V CIRCUIT BREAKER LOGIC SETTINGS PER COORDINATION STUDY RESULTS.


PANEL		LC		120/208 VOLT 3PH, 4W										125 AMP COPPER BUS												
LOCATION:		SUBSTATION 11										MAIN C.B.: 60 AMPS														
MOUNTING:		SWITCHGEAR										LOAD: 6 AMP 2 KVA														
CR	LOAD (VA)			LOAD DESCRIPTION	OUTLETS			C.B.			BUS			C.B.			OUTLETS			LOAD DESCRIPTION	LOAD (VA)			CR		
	LINE A	LINE B	LINE C		MS	RC	CO	LT	P	TRP	A	B	C	TRP	P	LT	CO	RC	MS		LINE A	LINE B	LINE C			
1	720			RECEPTACLE						1	20	A												2		
3		1120		LIGHTING						1	20	B												4		
5				SPARE						1	20	C												6		
7				SPARE						1	20	A												8		
9												B												10		
11												C												12		
	720	1120	0	SUBTOTALS																						
NOTES:																					SUBTOTALS:			0	0	0
																					LINE TOTALS:			720	1120	0
																					LCL. ADDED:			180	280	0
																					TOTAL VA/PHASE:			900	1400	0
																					PF ADJUST:			15		


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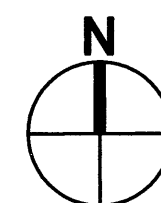
	NATIONAL AERONAUTICS AND SPACE ADMINISTRATION DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA
	DRAWING TITLE SINGLE LINE DIAGRAM
PROJECT TITLE REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM, PHASE VI <div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 2px solid black; padding: 5px; margin-right: 10px;">2</div> <div>OPTION #2 - SUBSTATION 11 - 100%</div> </div>	

APPROVALS			DATE
Chief/Engineer/Inspector & Assistant Chief/Officer	<i>Van Lowe</i>		6/23/10
Project Manager	<i>DOV</i>		6/23/10
Security Officer	<i>DOV</i>		6/23/10
Project Manager	<i>Van Lowe</i>		6/23/10
Safety Officer	<i>David F. Muller</i>		6/21/10
Witness	<i>David</i>		6/21/10
ISSUED BY	<i>DRM</i>	DATE STARTED	7-12-06
W.O. #		DATE PRINTED	6-14-10
PLOT SCALE	NONE	TRADE S. F. NO.	
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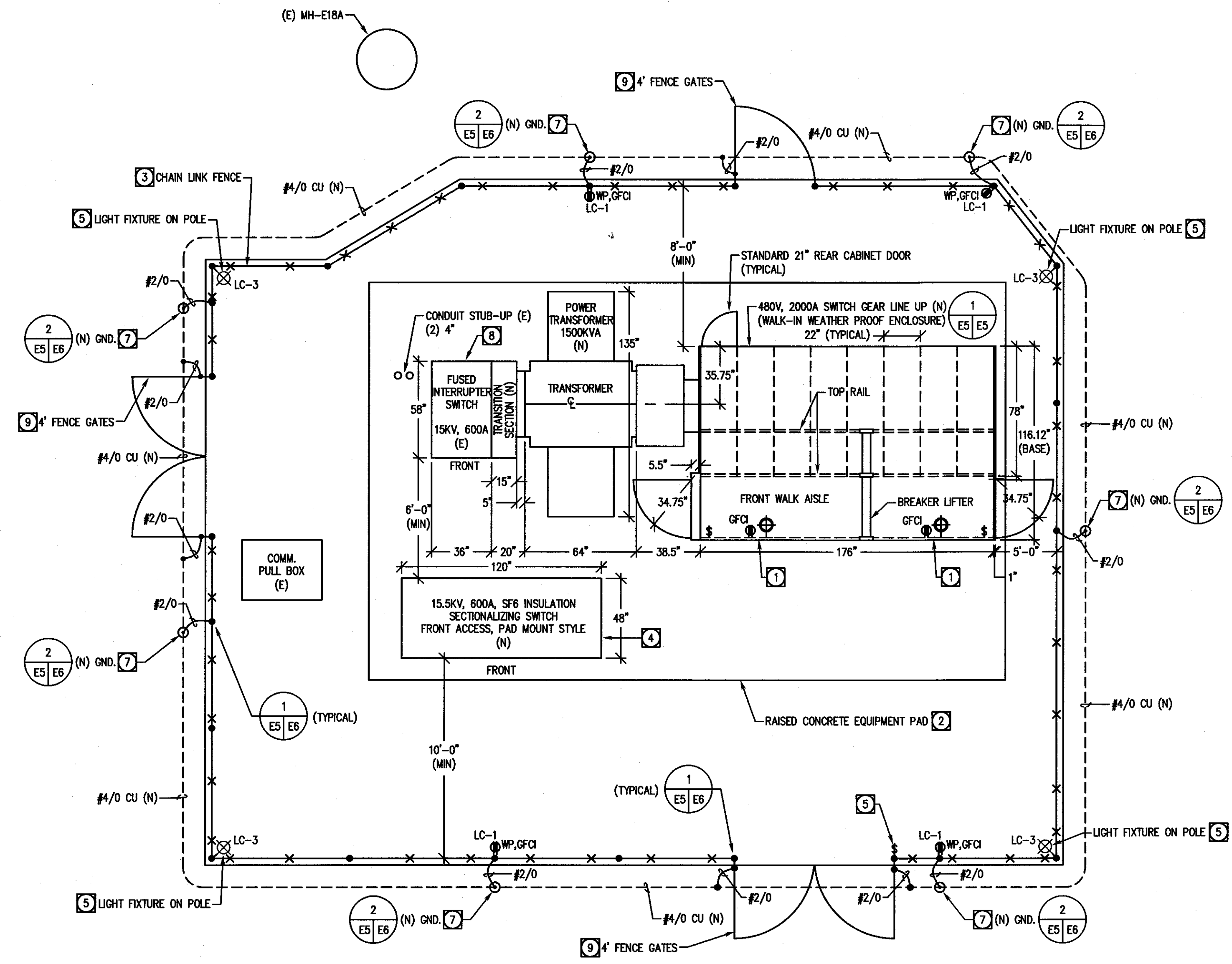
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78" DEPTH (NOTE 1)							STATION POWER 15KVA XFMR
DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	
MAIN 3200AF 2000AT	FEEDER 2 600AF 150AT	FEEDER 4 600AF 400AT	FEEDER 6 800AF 800AT	FEEDER 8 600AF 150AT	FEEDER 10 600AF SPACE	FEEDER 12 600AF SPACE	
DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	DIGITAL METER	
FEEDER 1 600AF 150AT	FEEDER 3 600AF 400AT	FEEDER 5 600AF 400AT	FEEDER 7 800AF 800AT	FEEDER 9 600AF SPACE	FEEDER 11 600AF SPACE	FEEDER 13 600AF SPACE	LOAD CENTER 120/208V 60A, 3PH
SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE	SPACE

NOTES:
1. PROVIDE WALK-IN ENCLOSURE WITH "TOP-OF-GEAR" BREAKER LIFTER AND FRONT ACCESS DOORS.

480V SWITCHGEAR FRONT ELEVATION	SCALE: NTS	1 ES ES
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PARTIAL SITE PLAN - REMODEL
SCALE: 1/4"=1'-0"

- PLAN SPECIFIC NOTES:
1. PROVIDE PREWIRED INTERIOR LIGHTING (SWITCHED) AND MAINTENANCE RECEPTACLES.
 2. RAISED CONCRETE EQUIPMENT PAD AND SLAB ON GRADE TO BE PROVIDED PER CIVIL PLANS.
 3. CHAIN LINK FENCE TO BE PROVIDED WITH CLEARANCES SHOWN, PER CIVIL PLANS.
 4. PROVIDE SPECIFIED SF6 SWITCH INSTALLED OVER EXISTING 15KV FEEDER CONDUIT STUB-UPS. RECONNECT EXISTING FEEDERS PER SINGLE LINE DIAGRAM.
 5. PROVIDE 250W METAL HALIDE FIXTURE, WITH DARK BRONZE COLOR AND MULTI-TAP BALLAST (SPAUDLING LIGHTING MODEL NO. ASB-C-250MH-D8-MT OR EQUIVALENT), TENON TOP POLE MOUNTED ON 15 FOOT ROUND 4" STEEL POLE, USED AS FENCE CORNER POST, WITH CONCRETE BASE. PROVIDE PHOTOCELL CONTROL (FOR AUTO OFF) ON LIGHT FIXTURE CIRCUIT, WITH POLE MOUNTED, NORTH FACING UNIT. MOUNT FIXTURE AT +12' ABOVE FINISHED SLAB ON GRADE. PROVIDE TOGGLE SWITCH, IN A WEATHER-PROOF ENCLOSURE FOR MANUAL ON/OFF CONTROL.
 6. EXPAND EXISTING CONCRETE SLAB AS SHOWN TO ALLOW FENCE INSTALLATION AT SPECIFIED CODE REQUIRED MAINTENANCE CLEARANCE FROM THE ELECTRICAL EQUIPMENT.
 7. PROVIDE GROUND WELL WITH 10"x3/4" DIA COPPER-CLAD STEEL ROD. PROVIDE CONNECTING GROUND WIRE (#4/0 CU), TO ALL GROUND RODS, AT 12" BELOW GRADE. BOND ALL NEW AND EXISTING POWER EQUIPMENT AND FENCING TO GROUND SYSTEM WITH #2/0 COPPER CONDUCTORS.
 8. REINSTALL EXISTING FUSED INTERRUPTER SWITCH OVER EXISTING 15KV FEEDER CONDUIT STUB-UPS. RECONNECT EXISTING FEEDERS PER SINGLE LINE DIAGRAM.
 9. PROVIDE PERMANENT "WARNING-HIGH VOLTAGE" SIGNAGE, PER ANSI X535 STANDARD, ON SUBSTATION GATES.

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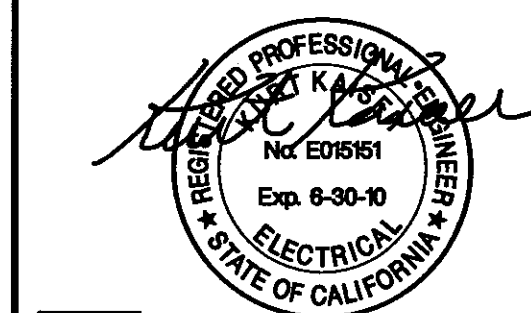
<p>DONN C. GILMORE & ASSOCIATES, INC. Consulting Mechanical and Electrical Engineers 4051 E. La Palma Ave. Ste. A Anaheim, CA 92807 Ph: 714.630.4291 Fax: 714.630.4805</p>	<p>DATE SYM REVISION BY A'PD</p>				<p>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA</p>		<p>APPROVALS</p> <p>Project Manager: <i>Don Lowly</i> 6/23/10 Safety Officer: <i>Don Hach</i> 6/23/10 Project Engineer: <i>Don Lowly</i> 6/23/10 Safety Officer: <i>David F. Mullen</i> 6-23-10</p>		<p>DATE</p> <p>6/23/10 6/23/10 6/23/10 6-23-10</p>
	<p>DRAWING TITLE</p> <p>PARTIAL SITE PLAN REMODEL</p>				<p>PROJECT TITLE</p> <p>REPAIR PRIMARY ELECTRICAL DISTRIBUTION SYSTEM, PHASE VI</p>		<p>DATE START</p> <p>7-12-08</p>		<p>DATE</p> <p>6-14-10</p>
	<p>2</p>				<p>OPTION #2 - SUBSTATION 11 - 100%</p>		<p>DATE PRINT</p> <p>6-14-10</p>		<p>DATE</p> <p>6-14-10</p>
	<p>DATE</p>				<p>DATE</p>		<p>DATE</p>		<p>DATE</p>
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FENCE AND GATE GROUNDING DETAIL

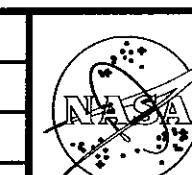
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
 DRYDEN FLIGHT RESEARCH CENTER
 EDWARDS, CA

	DRAWING TITLE
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ELECTRICAL DETAILS

	PROJECT TITLE
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REPAIR PRIMARY ELECTRICAL
DISTRIBUTION SYSTEM, PHASE VI

2 OPTION #2 - SUBSTATION 11 - 100%

APPROVALS

DATE _____

APPROVALS	
Chief, Facilities Engineering & Asset Mgmt. Office	

Don Cowley
Product Manager

DOV Hach

Security Office

Product Required

Safety Office 10/1/2011

Daniel F. Mullen

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